APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/420,798	10/19/1999	YOSHIHIKO IMAMURA	SON-1661	3308

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EXAMINER
OPIE, GEORGE L

ART UNIT	PAPER NUMBER
2194	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/420,798	Applicant(s) Imamura
	Examiner George L. Opie	Art Unit 2126

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

1) _X_ Responsive to communication(s) filed on _12 May 2005_ .

2a) _X_ This action is **FINAL**.   2b) ___ This action is non-final.

3) ___ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) _X_ Claim(s) _23-27, 29-36, 38-39 and 41-44_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ___ Claim(s) _____ is/are allowed.

6) _X_ Claim(s) _23-27, 29-36, 38-39 and 41-44_ is/are rejected.

7) ___ Claim(s) _____ is/are objected to.

8) ___ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ___ The specification is objected to by the Examiner.

10) ___ The drawing(s) filed on _____ is/are objected to by the Examiner.

11) ___ The proposed drawing correction filed on _____ is: a) ___ approved b) ___ disapproved.

12) ___ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)_ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

    a) ___ All b) ___ Some * c) ___ None of the CERTIFIED copies of the priority documents have been:

        1. ___ received.

        2. ___ received in Application No. (Series Code / Serial Number) _____.

        3. ___ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14) ___ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

14) ___ Notice of References Cited (PTO-892)
15) ___ Notice of Draftsperson's Patent Drawing Review (PTO-948)
16) ___ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.

17) ___ Interview Summary (PTO-413) Paper No(s). _____.
18) ___ Notice of Informal Patent Application (PTO-152)
19) ___ Other:

DETAILED ACTION

This Office Action is responsive to Applicant's Amendment filed 12 May 2005, in which claim 27 was amended. Claims 23-27, 29-36, 38-39 and 41-44 are presently pending in the application.

1.   Request for copy of Applicant's response on floppy disk:
Please help expedite the prosecution of this application by including, along with your amendment response in paper form, an electronic file copy in WordPerfect, Microsoft Word, or in ASCII text format on <u>a 3½ inch IBM format floppy disk</u>. Please include all pending claims along with your responsive remarks. Only the paper copy will be entered -- your floppy disk file will be considered a duplicate copy. Signatures are not required on the disk copy. The floppy disk copy is not mandatory; however, it will help expedite the processing of your application. Your cooperation is appreciated.

2.   Claim Rejections - 35 U.S.C. § 103

        The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 23-27, 29-36, 38-39 and 41-44 are rejected under 35USC §103(a) as being unpatentable over the Admitted Prior Art (APA) provided in the Application background in view of **Gupta et al. (U.S. Patent 5,787,272).**

As to claim 23, the APA teaches a "multiprocessor which is comprised of a plurality of CPUs connected via a common bus and executes a plurality of mutually independent programs in parallel", Application-page3 wherein

a first processor element "processor element 111", page4 of said plurality of processor elements for executing a first user program "instruction codes ... prg A are successively executed", page5 of a plurality of user programs, said first processor element executes a wait instruction, said wait instruction suspends processing of said first user program "when an instruction code 'wait (Prg D)' is

executed in the processor element 111, the processing ... enters a synchronization waiting state", page7 and

a second processor element "processor element 114", p7 of said plurality of processor elements for executing a second user program "Prg D" of said plurality of user programs, said second processor element executes a wait release instruction "code 'end' of the subprogram Prg D" said wait release instruction commands said first processor element to resume said processing of said first user program "message indicating the completion of the subprogram Prg D is notified to the processor element 111 . . . As a result, the processor element 111 releases the synchronization waiting state and executes the next instruction code."

Although the APA does not explicitly disclose the first processor executing a "program end instruction" to cause resumption of the second program, it would have been obvious for one skilled in the art, from the APA's "instruction code 'end'" teaching wherein processor 114 conveys a release/resume command to processor 111 when processor 114 has executed an "end" instruction, to provide that the first processor would likewise employ this function to have the second program resume its execution.

The APA does not explicitly disclose the second processor element continuing processing of the second program after executing the wait release instruction.

Gupta teaches a system in which "the processor will be able to continue executing instructions", p3 35-41 which corresponds to the processor element continuing processing of its program after executing the wait release instruction. It would have been obvious to combine Gupta's teachings with the APA because the procedure for the processors to carry on execution will optimize the computing resources as "the processors will have to spend very little or no time waiting for each other", p5 1-9, and thereby achieving greater parallel processing efficacy.

As to claim 24, the APA teaches a first processor element "processor element 111", page4 of said plurality of processor elements for executing a first user program "instruction codes ... prg A are successively executed", page5 of a plurality of user programs, said first processor element executes a wait instruction, said wait instruction suspends processing of said first user program "when an instruction code 'wait (Prg D)' is executed in the processor element 111, the processing ... enters a synchronization waiting state", page7

a second processor element "processor element 114", p7 of said plurality of processor elements for executing a second user program "Prg D" of said plurality of user programs, said second processor element executes a wait release

instruction "code 'end' of the subprogram Prg D" said wait release instruction commands said first processor element to resume said processing of said first user program "message indicating the completion of the subprogram Prg D is notified to the processor element 111 . . . As a result, the processor element 111 releases the synchronization waiting state and executes the next instruction code."

The APA does not explicitly disclose the second processor element continuing processing of the second program after executing the wait release instruction.

Gupta teaches a system in which "the processor will be able to continue executing instructions", p3 35-41 which corresponds to the processor element continuing processing of its program after executing the wait release instruction. It would have been obvious to combine Gupta's teachings with the APA because the procedure for the processors to carry on execution will optimize the computing resources as "the processors will have to spend very little or no time waiting for each other", p5 1-9, and thereby achieving greater parallel processing efficacy.

As to claim 25, the APA teaches a "multiprocessor which is comprised of a plurality of CPUs" using VLSI *on a single chip for parallel processing*.

As to claim 26, the APA teaches a "multiprocessor which is comprised of a plurality of CPUs connected via a common bus and executes a plurality of mutually independent programs in parallel", Application-page3 wherein

a first processor element "processor element 111", page4 of said plurality of processor elements for executing a first user program "instruction codes ... prg A are successively executed", page5 of a plurality of user programs, said first processor element executes a wait instruction, said wait instruction suspends processing of said first user program "when an instruction code 'wait (Prg D)' is executed in the processor element 111, the processing ... enters a synchronization waiting state", page7 and

a second processor element "processor element 114", p7 of said plurality of processor elements for executing a second user program "Prg D" of said plurality of user programs, said second processor element executes a wait release instruction "code 'end' of the subprogram Prg D" said wait release instruction commands said first processor element to resume said processing of said first user program "message indicating the completion of the subprogram Prg D is notified to the processor element 111 . . . As a result, the processor element 111 releases the synchronization waiting state and executes the next instruction code."

The APA (page 6) teaches the processor executing instructions without suspending program execution after signaling a "release" instruction.

Gupta teaches a system in which "the processor will be able to continue executing instructions", p3 35-41 which corresponds to the processor element continuing processing of its program after executing the wait release instruction. It would have been obvious to combine Gupta's teachings with the APA because the procedure for the processors to carry on execution will optimize the computing resources as "the processors will have to spend very little or no time waiting for each other", p5 1-9, and thereby achieving greater parallel processing efficacy.

As to claim 27, the APA (page 3) teaches parallel processing programs with "communication between processes" by sending messages over a common bus.

As to claim 29, see the background details on the instruction code "end" executed in the processor elements 111 through 114 on page 7 of the APA.

As to claims 30-31, the APA teaches a first storage means "common memory 15", p4 and second storage means "local memory 32" that correspond to the processing means "processor elements 111 to 114", p5 reading programs from the first storage means "user programs read from the common memory … and successively supplies instruction codes of the user program stored in the local memory 32 to the processor core 31 for execution.", page 4.

As to claim 32, the APA teaches the system "reads the user programs stored in the common memory 15 into the local memories 32", page 5, until the "end" instruction terminates the process.

As to claim 33, the APA (pages 5-7) teaches the "wait release" instruction executed by the corresponding processor element as claimed.

As to claim 34, the APA teaches "instruction code 'gen(Prg_B)' is executed in the processor element 111, . . . Then the subprogram Prb B stored in the common memory 15 is read into the local memory 32 of the processor element 112" pp5-6.

As to claim 35, the APA (page 5) teaches an "arbiter 16" that corresponds to the program execution assigning means and its claimed functions.

As to claims 36, 38-39 and 41-42, note the rejections of claims 23-24, 26, 33 and 35 respectively. Claims 36, 38-39 and 41-42 are the same as claims 23-24, 26,

33 and 35, except claims 36, 38-39 and 41-42 are method claims and claims 23-24, 26, 33 and 35 are apparatus claims.

As to claim 43, see the discussion of claim 23 supra. Claim 43 is functionally equivalent to claim 23, but for the limitation that the other processing means enters a waiting state when executing the release instruction, which would have been an obvious variation from the claim 23 recitations. Having the other processor pause for synchronization when releasing the "wait" of the first process would naturally have flowed from the APA's parallel process coordination teachings.

As to claim 44, note the rejection of claim 26 above. Claim 44 is the same as claim 26, except claim 44 is a computer program product claim and claim 26 is a method claim.

4.   The prior art of record and not relied upon is considered pertinent to the applicant's disclosure. Specifically, the below reference(s) will also have relevancy to one or more elements of the Applicant's claimed invention as follows:
U.S. Patent No. 6,330,619 to Kruezburg which teaches the parallel processing that advances programs while issuing codes to coordinate the processes;
U.S. Patent No. 6,263,406 to Uwano et al. which teaches the parallel execution of programs progressing and activating synchronization controls;
U.S. Patent No. 5,781,775 to Ueno which teaches the task execution management for continuing jobs while coordinating the requisite parallelism;
U.S. Patent No. **5,742,824** to Kosaka which teaches the process maintaining its running after supplying/signaling concurrency controls; and,
U.S. Patent No. 5,481,747 to Kametami which teaches the parallel processing system with functionality for processors to send coordination interactions while carrying on processing.

5.   **Response to Applicant's Arguments:**

Applicant argues (claim 23) that the APA and Gupta's prior art teachings do not meet the processor continuing a program after executing a release instruction. Contrary to Applicant's contention, however, the prior art does provide the parallel processor elements that can continue respectively executing programs after initiating release instructions. The APA's teachings clearly meet the first processor element (PE111) that executes wait instructions to suspend program processing, and then a second processor element (PE114) executing a release instruction to signal the first processor to resume its execution, and the program end (last instruction code "end") for signaling resumption of a second processor. Gupta supplies the mechanism of parallel processors continuing execution after initiating release instructions for improving each program's progress. Therefore,

the APA and Gupta, taken together, do make obvious the synchronization of parallel processors with wait, resume and continuing operations as claimed.

During patent examination, the pending claims must be "given their broadest reasonable interpretation consistent with the specification." *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969)

The scope of the claimed "continuing processing" by a parallel processor clearly transcends the more narrow scope that Applicant attempts to impute through argument. Claimed subject matter, not the specification is the measure of the invention. Limitations in the specification cannot be read into the claims for the purpose of avoiding the prior art, In re Self, 213 USPQ 1,5 (CCPA 1982). The Examiner has a *duty* and *responsibility* to the public and to Applicant to interpret the claims *as broadly as reasonably possible* during prosecution. (see *In re Prater, 56 CCPA 1381, 415F.2d 1393, 162 USPQ 541 (1969)*).

Applicant also argues that the prior art teachings lack motivation for combining. In response, Examiner notes that the test for the relevance of a cited combination of references is: "whether the teachings of the prior art, taken as a whole, would have made obvious the claimed invention," *In re Gorman*, 933 F.2d at 986, 18 USPQ2d at 1888. Subject matter is unpatentable under section 103 if it 'would have been obvious ... to a person having ordinary skill in the art.' While there must be some teaching, reason, suggestion, or motivation to combine existing elements to produce the claimed device, it is not necessary that the cited references or prior art specifically suggest making the combination: *In re Nilssen*, 851 F.2d 1401, 1403, 7 USPQ2d 1500, 1502 (Fed. Cir. 1988)." Such suggestion or motivation to combine prior art teachings can derive solely from the existence of a teaching, which one of ordinary skill in the art would be presumed to know, and the use of that teaching to solve the same [or] similar problem which it addresses. *In re Wood*, 599 F.2d 1032, 1037, 202 USPQ 171, 174 (CCPA 1979). "In sum, it is off the mark for litigants to argue, as many do, that an invention cannot be held to have been obvious unless a suggestion to combine prior art teachings is found in a specific reference." *In re Oetiker*, 24 USPQ2d 1443 (CAFC 1992).

In considering the "continuing processing" and "wait instruction" recitations, it is noted that Applicant uses terminology that has broad meaning in the art, and thus requires a broad interpretation of the claims in determining patentability of the disclosed invention. Although the claims are interpreted in light of the

specification, limitations from the specification are not read into the claims. See In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Applicant should set forth claims in language that clearly, distinctly, unambiguously and uniquely define the invention. The fact that Applicant has not narrowed the definition/scope of the current claims implies that Applicant intends an extensive coverage breadth of the claims, which is met by the APA and Gupta.

Limitations appearing in the specification but not recited in the claim are not read into the claim. *E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1369, 67 USPQ2d 1947, 1950 (Fed. Cir.. 2003). claims must be interpreted "in view of the specification" without importing limitations from the specification into the claims unnecessarily. (see *Prater supra at 1404-05, 550-551)*.

Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. >*E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1369, 67 USPQ2d 1947, 1950 (Fed. Cir. 2003) (claims must be interpreted "in view of the specification" without importing limitations from the specification into the claims unnecessarily).< *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969).

In light of the references of record, the parallelism by suspending and resuming operations for synchronization, in the manner recited in the pending claims does not constitute a nonobvious improvement over the prior art.

Applicant's arguments, filed 12 May 2005, have been fully considered but they are not deemed to be persuasive. For the reasons detailed above, the rejections set forth in the previous Office Action under *35 U.S.C. § 103* are maintained.

6.   THIS ACTION IS MADE FINAL.

A SHORTENED STATUTORY PERIOD FOR RESPONSE TO THIS FINAL ACTION IS SET TO EXPIRE THREE MONTHS FROM THE DATE OF THIS ACTION. IN THE EVENT A FIRST RESPONSE IS FILED WITHIN TWO MONTHS OF THE MAILING DATE OF THIS FINAL ACTION AND THE ADVISORY ACTION IS NOT MAILED UNTIL AFTER THE END OF THE THREE-MONTH SHORTENED STATUTORY PERIOD, THEN THE SHORTENED STATUTORY PERIOD WILL EXPIRE ON THE DATE THE ADVISORY ACTION IS MAILED, AND ANY EXTENSION FEE PURSUANT TO 37 C.F.R. 1.136(a) WILL BE CALCULATED FROM THE MAILING DATE OF THE ADVISORY ACTION. IN NO EVENT WILL THE STATUTORY PERIOD

FOR RESPONSE EXPIRE LATER THAN SIX MONTHS FROM THE DATE OF THIS FINAL ACTION.

7.   Contact Information:

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system.

Status information for published applications may be obtained from either Private-PAIR or Public-PAIR.

Status information for unpublished applications is available through Private-PAIR only.

For more information about the PAIR system, see   http://pair-direct.uspto.gov.

Should you have questions regarding access to the PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

.   All responses sent by U.S. Mail should be mailed to:
Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

.   Hand carried responses should be delivered to the *Customer Service Window* (Randolph Building, 401 Dulany Street, Alexandria, Virginia 22314) and, if submitting an electronic copy on floppy or CD, to expedite its processing, please notify the below identified examiner prior to delivery, so that the Applicant can "handoff" the electronic copy directly to the examiner.

The fax number (571) 273-8300 should be used for all fax transmissions to the Office.

All OFFICIAL faxes will be handled and entered by the docketing personnel. The date of entry will correspond to the actual FAX reception date unless that date is a Saturday, Sunday, or a Federal Holiday within the District of Columbia, in which case the official date of receipt will be the next business day. The application file will be promptly forwarded to the Examiner unless the application file must be sent to another area of the Office, e.g., Finance Division for fee charging, etc.

.   Any inquiry of a general nature or relating to the status of this application
should be directed to the Group receptionist at **(571) 272-2100.**

.   Any inquiry concerning this communication or earlier communications
from the examiner should be directed to George Opie at (571) 272-3766 or
via e-mail at *George.Opie@uspto.gov*. Internet e-mail should not be used where
sensitive data will be exchanged or where there exists a possibility that sensitive
data could be identified unless there is an express waiver of the confidentiality
requirements under 35 U.S.C. 122 by the Applicant. Sensitive data includes
confidential information related to patent applications.

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